

What is claimed is:

1. A method for oxidizing a contaminant present in an environmental medium, said method comprising contacting the contaminant with a composition comprising a persulfate and hydrogen peroxide.
2. The method of claim 1, wherein the persulfate is a monopersulfate or a dipersulfate.
3. The method of claim 1, wherein the persulfate is sodium base, ammonium base, or potassium base.
4. The method of claim 1 wherein the persulfate is sodium persulfate.
5. The method of claim 1 wherein the mole ratio of persulfate to hydrogen peroxide is equal to from 1:20 to 20:1.
6. The method of claim 1 wherein the mole ratio of persulfate to hydrogen peroxide is equal to from 1:10 to 10:1.
7. The method of claim 1 wherein the persulfate and hydrogen peroxide are applied simultaneously to the medium.
8. The method of claim 1 wherein the persulfate and hydrogen peroxide are applied sequentially to the medium.
9. The method of claim 1 wherein the persulfate is applied to the medium prior to the application of the hydrogen peroxide.
10. The method of claim 1 wherein the hydrogen peroxide is applied to the medium prior to the application of the persulfate.
11. The method of claim 1 wherein the persulfate and hydrogen peroxide are

applied to the medium sequentially in repeated applications.

12. The method of claim 11 wherein the repeated sequential additions of persulfate and hydrogen peroxide occur continuously.

13. The method of claim 11 wherein the repeated sequential additions of persulfate and hydrogen peroxide are separated by time intervals.

14. The method of claim 1 wherein the environmental medium is selected from soil, rock, groundwater, wastewater and process water.

15. The method of claim 1, wherein the oxidation is performed in situ or ex situ.

16. The method of claim 1, wherein the composition is introduced into the environmental medium in sufficient quantities and under conditions to oxidize substantially all of the contaminants in the medium.

17. The method of claim 1 where the composition also includes an activator.

18. The method of claim 17 where the activator is a divalent or trivalent transition metal.

19. The method of claim 18 wherein the activator is a divalent transition metal selected from Fe (II), Cu (II), Mn (II) or Zn (II).

20. The method of claim 18 wherein the activator is a trivalent transition metal, iron (III).

21. The method of claim 17 wherein the activator is a divalent or trivalent transition metal combined with a chelating agent.

22. The method of claim 21 wherein the activator is a divalent transition metal selected from iron (II), Cu (II), Mn (II) or Zn (II).
23. The method of claim 21 wherein the activator is a trivalent transition metal selected from iron (III).
24. The method of claim 21 wherein the chelating agent is selected from ethylenediamine tetraacetic acid, citric acid, phosphate, phosphonate, catechol or nitroacetic acid.
25. A composition suitable for use in treating a contaminant present in an environmental medium, said composition comprising a persulfate and hydrogen peroxide.
26. The composition of claim 25, wherein the persulfate is a monopersulfate or a dipersulfate.
27. The composition of claim 25, wherein the persulfate is sodium base, ammonium base, or potassium base.
28. The composition of claim 25, wherein the persulfate is sodium persulfate.
29. The composition of claim 25 wherein the mole ratio of persulfate to hydrogen peroxide is equal to from 1:20 to 20:1.
30. The composition of claim 25 wherein the mole ratio of persulfate to hydrogen peroxide is equal to from 1:10 to 10:1.
31. The composition of claim 25 further including an activator.
32. The composition of claim 31 wherein the activator is a divalent or trivalent transition metal.

33. The composition of claim 32 wherein the activator is a divalent transition metal selected from Fe (II), Cu (II), Mn (II) or Zn (II).

34. The composition of claim 32 wherein the activator is a trivalent transition metal, Fe (III).

35. The composition of claim 31 wherein the activator is a divalent or trivalent transition metal combined with a chelating agent.

36. The composition of claim 35 wherein the activator is a divalent transition metal selected from Fe (II), Cu (II), Mn (II) or Zn (II).

37. The composition of claim 35 wherein the activator is a trivalent metal, Fe (III).

38. The composition of claim 35 wherein the chelating agent is selected from ethylenediamine tetraacetic acid, citric acid, phosphate, catechol or nitroacetic acid.